UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
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June 7, 2007

Mr. Stuart J. Appelbaum, Chief
Planning Division
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

SUBJ: EPA NEPA Review of the COE "Draft Caloosahatchee River (C-43) West Basin Storage Reservoir Project" (April 2007); Hendry County; CEQ# 20070159; ERP# COE-E39068-FL

Dear Mr. Appelbaum:

In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the referenced U.S. Army Corps of Engineers (COE) Draft Environmental Impact Statement (DEIS) for the proposed Calooshatchee River (C-43 Canal) West Basin Storage Reservoir Project (C-43 Reservoir). This proposal is a major component of the Comprehensive Everglades Restoration Plan (CERP) and therefore was reviewed as a project implementing the overall goals and objectives of Everglades restoration. EPA (Water Management Division) attended the COE's project Public Hearing in LaBelle, Florida on May 17, 2007.

Current Ecological Conditions

The Caloosahatchee River and Estuary are being stressed by seasonal freshwater releases from Lake Okeechobee and historic water management/urban/agricultural development within the C-43 Basin. The downstream releases from Lake Okeechobee result in seasonal high and low flows (too much or too little freshwater), elevated nutrients, and salinity fluctuations for the fresh and brackish water ecosystems below S-79 (including riverine and estuarine fisheries, oysters and submerged aquatic vegetation (SAVs) such as *Vallisineria*). While the COE's ongoing modifications to Lake Okeechobee's water release schedule (WSE) will temper these downstream impacts, additional water storage is needed to more effectively reduce these impacts and control the volume and timing of releases to the affected lower Caloosahatchee River and Estuary. In addition to these natural system impacts from seasonal flows, the impacts of losing large volumes of freshwater to tide is another consideration. Overall, 1.7 billion gallons of water per day are lost to the Gulf of Mexico and Atlantic Ocean that once flowed through the Everglades.

Proposed C-43 Reservoir

The proposed C-43 reservoir would be an above-ground, 10,500-acre impoundment with a 34-39 ft high dike constructed on an existing 12,372-acre orange grove farmland site in Hendry County. The 15-25 ft deep reservoir would have a 170,000 ac-ft storage capacity and would be compartmentalized into two cells. Water inflows would be controlled by a 1,500 cfs pump that would process some 20% of average annual Caloosahatchee River flows (Lake Okeechobee release water and basin runoff water) by way of Townsend Canal during wet seasons, and return impounded water back to the Caloosahatchee River upstream of S-79 during dry seasons. The average hydraulic residence time (HRT) of the impounded waters would be lengthy (192 days), allowing for some settling of nutrients (TP&TN) and particulates (TSS). Such water quality benefit could be slightly counteracted by algal nitrogen fixation in the reservoir.

Resident fish and other fauna can be expected to establish within the impoundment, although the reservoir habitat will be minimal since it will have no littoral zones and will experience dry-downs. However, the impoundment's sloped bottom design could create a remaining pool in the northwest deep end (25 ft) for fish refugia. Much better habitat would exist in the perimeter canal that would surround the reservoir and include 109 acres of littoral habitat along its banks. The perimeter canal is designed for impoundment seepage control and to allow continued agricultural water supply from Townsend Canal.

In addition to flow management to moderate the impacts to the lower Caloosahatchee River and Estuary, the project is to also provide a total of 20 acres of oyster habitat (shell for spat) over a period of the first 10 years of the project. Also, although the impoundment is designed to benefit the lower Caloosahatchee systems rather than provide agricultural or urban water supply, it would nevertheless generate some water supply benefit by providing more dependable, year-round flows at S-79 where an existing urban water supply intake is located.

Alternatives

In addition to the No Action Alternative, four action alternatives were carried forward for analysis in the DEIS (Alts. 2, 3B, 3C & 4). These alternatives would have the similar designs (2 cells and a 10,500-ac footprint), differing only in capacity (100,000, 170,000 or 220,000 ac-ft volume with a 27-44 ft high dike, and an inflow pump size of 1,500 or 3,800 cfs). The COE's Tentative Selected Plan (= preferred alternative) for the C-43 reservoir is Alternative 3B, which proposes a 34-39 ft high dike and a 1,500 cfs pump (PS-1). Although a larger pump would be beneficial in minimizing pulsed high flows and providing greater flexibility (pg. 6-9), we understand that the 3,800 cfs pump would be considerably more expensive. A larger reservoir would also have similar benefits but would also have higher attendant land and other costs (e.g., a larger reservoir alternative (4B) was eliminated due to cost).

The performance of these final four action alternatives was reviewed (Table 6-2) against a "desired envelope" or flow target (EST05). Preferred Alternative 3B agreed with the desired envelope 74.8% of the time compared to only 45.5% for the No Action (= 2050 Future Without Project). As expected, project alternatives with a larger pump (Alt. 3C: 82.3%) and greater reservoir volume (Alt. 4: 83.8%) performed slightly better (since they would reduce high flows better), while those with a smaller volume and similar pump (Alt. 2: 67.9%) performed slightly less. Therefore, at its capacity level, Preferred Alternative 3B is in the middle of the ordered performance range (Alts. 2, 3B, 3C & 4). We will defer to the COE as to whether such capacity is sufficient to recover the lower Caloosahatchee River and Estuary, or if additional performance is needed through the selection of a larger design in the FEIS, or through monitoring and adaptive management of preferred 3B (if implemented), and/or through the addition of supplemental storage capacity along the Okeechobee Waterway in the near future.

Project Implementation

Above-ground, in-ground and/or underground reservoirs were planned components of the original Restudy and current CERP. However, due to federal delays in project authorization and funding, the present C-43 Reservoir project is being implemented by the State of Florida (South Florida Water Management District sponsor) for the COE through its Acceler8 Program to expedite the project. The present EIS is expected to serve as the COE's NEPA documentation for the federal project (once appropriated) and presumably also for any regulatory permitting responsibilities. EPA appreciates the State's role in this regard in order to advance the implementation of CERP components of Everglades restoration.

EPA appreciates that the Jacksonville District has committed to initiating a Calooshatchee Watershed Project Implementation Report (PIR) effort in September 2007, to further address water storage and water quality treatment needs in the Caloosahatchee basin. Under the 1999 TMDL (Total Maximum Daily Load) Consent Decree, TMDLs for nutrients, DO, fecal coliforms and metals must be proposed by the Florida Department of Environmental Protection (FDEP) and approved by EPA no later than September 30, 2010 (or proposed by EPA by that date). The recently passed State of Florida 2007 Northern Everglades legislation requires earlier action by FDEP; specifically, to "...no later than 12/31/2008, propose for final agency action, TMDLs for nutrients for the tidal portions of the Caloosahatchee river and estuary." It is therefore important that close coordination between the Caloosahatchee Watershed PIR effort and FDEP/EPA TMDL programs occurs, such that nutrient reduction target setting is consistent between these efforts. It appears likely that future proposed TMDL-related nitrogen (TN) loading requirements at S-79 will require additional water quality treatment efforts in the Basin, such as agricultural BMPs and Stormwater Treatment Areas (STAs). In addition to the PIR effort, the Project Operating Manual should be expanded to more fully address possible operational actions to improve water quality conditions in discharge waters, while still achieving other project objectives.

When completed, the proposed project will be a large reservoir. As a reservoir, it will be considered waters of the United States and waters of the State, and State Class III Water Quality Standards (WQS) will apply. EPA has water quality concerns with the reservoir given the potential for high nutrient loads into the reservoir, and the resulting potential for high nutrient concentrations, low DO, presence of nuisance aquatic plants such as blue-green algae, and pesticides within the reservoir and downstream during releases. Since there is the potential for the reservoir to have poor water quality, it is important to identify what potential operational, management or other steps will be taken to address these water quality concerns if they arise. We also note that the Section 401 water quality certification has not been issued at this time and reserve our authority to comment further at that time.

Project Impacts

EPA fully supports the concept of providing additional water storage along the Okeechobee Waterway such as the C-43 Reservoir. Therefore, our concerns with the C-43 reservoir project are not conceptual but rather focus on project improvements from an environmental perspective. Our main concern is water quality assurance for flows released from the impoundment to benefit the lower Caloosahatchee natural systems. More specifically, we are concerned about the potential for warm weather blue-green algal blooms with algal toxins in reservoir waters, as well as low levels of dissolved oxygen (DO) in the waters released from the reservoir. Reductions in the algal growth potential and augmentation of DO levels for impoundment waters may be needed to improve water quality for the proposed project. Warm weather blue-green algal monitoring (monthly) should be required in the reservoir Water Quality Monitoring Plan.

EPA DEIS Rating

EPA rates this COE DEIS as "EC-1" (i.e., we have environmental concerns and request some additional information in the FEIS). Our primary concern for this project is water quality assurance. Our water quality and other comments are further developed in the *Detailed Comments* enclosure.

Should you have questions regarding our comments, feel free to contact Chris Hoberg of my staff for NEPA-related issues (404/562-9619 or hoberg.chris@epa.gov) or Eric Hughes in our EPA Water Management Division (located in your Jacksonville District office) for technical issues (904/232-2464 or hughes.eric@epa.gov).

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

Enclosure: *Detailed Comments*

cc:

Ray Judah – Lee County Commissioner; Ft. Myers, FL
Roland Ottolini – Lee County Natural Resources; Ft. Myers, FL (Attn: Wayne Daltry)
Mike Sole – Secretary: FDEP, Tallahassee, FL (Attn: Greg Knecht)
Paul Souza – Field Supervisor: FWS; Vero Beach, FL (Attn: Joyce Mazourek)
Carol Wehle – Executive Director: SFWMD; West Palm Beach, FL (Attn: Larry Gerry)

DETAILED COMMENTS

We offer the following recommendations for the COE's consideration in the development of the FEIS:

Water Quality

* *Nutrients* - As suggested in the DEIS, the water quality of the water released from the C-43 impoundment to the Caloosahatchee River should be no worse than the inflow water. We agree. Consistent with the purpose of the reservoir to improve estuarine health, water quality management should complement water quantity management as an important project goal. As such, we recommend that the algal growth potential (AGP) of the impounded waters be assessed to minimize algal blooms and associated toxins in the water column. Intuitively, reservoir conditions are conducive for algal blooms due to the impounded water's warm temperature, high nutrient loadings and long residence time. In contrast, the potential for algal blooms could be reduced since nutrients would settle during the residence time, Lake Okeechobee water releases are expected to be less over time, and Caloosahatchee River nutrient TMDLs will be established. For the project, a 29% reduction in TP loads and a 28% reduction in TN loads at S-79, compared to the future without project condition, is predicted for preferred Alternative 3B (Table 6-3). The FEIS should further discuss nutrient water quality and the potential for algal blooms.

As suggested above, nutrient levels are expected to decrease in part due to reduced discharges from Lake Okeechobee. Specifically, page 6-16 states that "...the reduction in nutrient loads at S-79 is largely the result of the reduction in discharges from Lake Okeechobee." The reasons for such "reduction in discharges" and its relationship with reduced nutrient concentrations should be further discussed in the FEIS.

* *Resuspensions* – Also, since nutrients and particulates are expected to settle out in the reservoir, it becomes unclear if such precipitants would be resuspended in the water column when the reservoir is filled during the wet season. The proposed 1,500 cfs inflow pump (PS-1) could potentially also entrain sediment from the Caloosahatchee River source water. Use of a larger pump (3,800 cfs) could exacerbate this water quality condition. The FEIS should discuss the potential for resuspension and sediment entrainment, as well as the overall inflow process. Reservoir operations should be designed to minimize inflow turbidity in the reservoir.

* *Site Contaminants* – The residual soils of the existing orange grove proposed for the reservoir site contain pesticide and copper residues. We also understand that copper and lead were found within the Townsend Canal that would provide a conduit for reservoir inflows. As such, these contaminants can be expected to enter reservoir waters. However, we understand that introduction of these pesticides and metals in the impoundment waters are not expected to result in exceedances of State WQS. The FEIS should verify this and offer resolutions if any such contaminants are predicted to exceed WQS in the reservoir water. Beyond WQS, fish bioaccumlation may also be a concern.

Regarding site contaminants, we suggest that the COE's protocol for establishing STAs on agricultural lands also be applied to the C-43 reservoir.

* *TMDLs* – The FEIS should more fully discuss the ongoing TMDL effort in the Calooshatchee Basin. It should also describe how the September 2007 start-up of the Caloosahatchee Watershed PIR will coordinate with the TMDL effort in setting appropriate water quality restoration targets for the Caloosahatchee Basin, particularly in the case of nitrogen loading at S-79.

* *Dissolved Oxygen* – Beyond nutrients and particulates, DO levels of return water could be of concern. DO levels should meet or exceed State WQS for waters returned to the Caloosahatchee River. Preferably, DO concentrations should approximate or exceed ambient River levels (if greater than WQS) to prevent an in-stream oxygen sag at the discharge. Although we understand that return water can be siphoned from outlets at various reservoir depths to help increase DO levels, some DO augmentation may be needed prior to release to insure adequate levels.

* *Water Quality Monitoring Plan* – Periodic reports from the Water Quality Monitoring Plan (WQMP) should be provided to FDEP and EPA's South Florida Office. Due to the current lack of water quality data (particularly nutrients) in penisular Florida for above-ground pumped impoundments, reporting of water quality conditions within the C-43 Reservoir and on reservoir discharge waters is critical to future water quality modeling evaluations, project design and adaptive management for future CERP projects. EPA finds the value of the water quality data that will be provided upon operation of the C-43 Reservoir critical to the project and CERP in general.

* *Reservoir Operating Manual* – The Water Quality Section (D.1.6.3) in the Project Operating Manual should be expanded to more fully address possible operational actions to improve water quality conditions in discharge waters, while achieving other project objectives. The COE and SFWMD should consult with natural resource agencies (including EPA) in developing more detailed operational manuals and in implementing adaptive management activities after project start-up. EPA's South Florida Office should be provided copies of periodic evaluations associated with the Water Quality Monitoring Plan.

Project Sizing – As previously suggested, EPA will defer to the COE and SFWMD regarding the need for a larger inflow pump (3,800 vs. 1,500 cfs) or a greater reservoir capacity (dike height or surface area) to further minimize estuarine impacts. We note that Preferred Alternative 3B with its 1,500 cfs pump (PS-1) would require 57 days to fill the reservoir (pg. 5-17), while Alternative 3C with its 3,800 cfs pump and would take only 23 days (pg. 5-18). In essence, how much environmental benefit will this project provide to the lower Caloosahatchee River and Estuary and is it sufficient at this time relative to the additional CERP storage capacity proposed (STAs, reservoirs, ASR wells), authorized and/or appropriated (or otherwise funded) at this time?

Waters of the United States – We note that 125 acres of vegetated wetlands plus some 900 acres of farmland ditches would be inundated by the 10,500-acre reservoir. We understand that these waters of the United States are generally degraded due to existing orange grove farming. The FEIS should provide additional discussion on the quality and function of these areas, particularly the wetlands, from a NEPA disclosure perspective. The FEIS should also briefly discuss if the other sites considered would impact notably less or more wetlands than the selected "Berry Groves" site.

Page 6-20 states that "[t]here will be no mitigation for wetlands as a result of the federal project". Page xviii states that "[t]he loss of this wetland habitat will be offset by the increase in habitat function and quality in the Caloosahatchee Estuary." Specifically, the DEIS (pg. xv) assumes that the project would benefit 71,000 acres in the Caloosahatchee Estuary. Compared to the No Action, it would also generate an average annual increase of approximately 13,000 habitat units within the Estuary. Since the C-43 Reservoir is a CERP project, it may also be noted that the overall CERP would restore numerous acres of wetlands in the Everglades. From a cumulative impacts perspective, many more wetland acres would be restored collectively by CERP projects than would be lost.

We also note that the banks of the perimeter canal will be designed to include 109 acres of littoral zone. We concur with such design, but also assume that any existing littoral habitat will be lost along those reaches of Townsend Canal interrupted by the construction of the reservoir and perimeter canal.

Water Supply – Reference is made in the DEIS (e.g., pg. 6-3) that the C-43 reservoir is not to be used for "elimination or transfer" of water supply. We assume the no "transfer" of water supply implies that new water supply will not be created by the reservoir (the FEIS should clarify). EPA believes that the C-43 impounded waters should be returned to the Caloosahatchee River during dry seasons for the benefit of natural systems as opposed to serving as source water for new urban or agricultural development. We recommend that such assurances be clarified in the FEIS.

The term "water supply" is used for various purposes in the DEIS (pg. 6-13). We recommend that this term be better qualified in the FEIS to indicate the intended use of the water supply (e.g., urban/potable, agricultural or natural system water supply). This would be helpful since without descriptors, we offer that the term "water supply" connotes source water for human consumption.

NEPA Process – From a NEPA disclosure perspective, we find certain sections (e.g., *Summary of Affected Resources*: pg. 6-7) to be well written and would likely be understandable to the layman reader. However, other analytical sections (e.g., modeling) would benefit from additional discussion in the FEIS. For example, the results from the Habitat Suitability Index modeling (Table 6-4) should be further discussed. That is, differences in suitability between Preferred Alternative 3B and the No Action (2050 FWO) are only +0.08 for oyster, +0.13 for *Vallisneria*, +0.05 for seagrass, and +0.13 for extreme events. It is unclear if these differences (or the differences for other alternatives)

are significant and what the significance thresholds are for this index. The FEIS should clarify such technical sections with additional discussion for the benefit of the public.

Other Comments

* *System Recovery (pg. ix)* – The DEIS states that "[w]ithout actions taken to reverse the effects of too much and too little freshwater entering the Caloosahatchee Estuary at the wrong times, the estuarine ecosystem will continue to be degraded and will likely worsen to the point that primary ecological functions such as nursery and forage habitat for aquatic plants and animals, are not recoverable." We agree that the current flow rates, volumes and timing are degrading the lower Caloosahatchee River and Estuary, and that continuance of such flows (i.e., the "without project" scenario) would extend and worsen this impact. However, most systems are recoverable once the stressors have been removed or sufficiently lessened (e.g., CERP is attempting to restore the Everglades), unless certain species become extinct in the process or hazardous materials are involved. As such, while we support the need for and implementation of the proposed reservoir project, we suggest that the "are not recoverable" portion of the above excerpt is somewhat of an over-statement.

* *Pump Entrainment (pg. 6-21)* – The DEIS acknowledges that "[d]ue to operation of the pumps there likely will be some entrainment and impingement of fish and other aquatic organisms." Although we defer to the U.S. Fish and Wildlife Service (FWS) and their State counterparts in this regard, the FEIS should discuss how impingement of aquatic juveniles/adults and entrainment of eggs/larvae will be minimized during the 1,500 cfs pumping operations. It may be noted that are larger pump (3,800 cfs) would likely increase these impingement/entrainment impacts.

* *Air Quality* – Although Hendry County is in attainment, emissions from the project could affect local air quality for project workers and any nearby residents. The FEIS should provide general information of the number of residences in the area that may be affected by the project. By project design, we assume populations near the proposed C-43 Reservoir are rural and scattered. The FEIS should discuss this.

As we have suggested in some of our other previous COE NEPA reviews, we recommend the use of reduced idling practices, cleaner fuels, and emission retrofits for construction equipment used by COE contractors whenever feasible to help minimize construction emissions. The COE may wish to discuss this further with EPA Region 4 (Dale Aspy at 404/562-9041). In any case, all construction equipment should be tuned to manufacturer's specifications to minimize air emissions.

In addition to construction equipment, air emissions from the operation of the reservoir inflow pump (PS-1) would generate emissions. For the 57 days needed to fill the reservoir for Preferred Alternative 3B using the proposed 1,500 cfs diesel pump, would the pump be operating essentially the whole time? We request that the FEIS include more information on the size of the PS-1 pump (break-horsepower, manufacturer, fuel

requirements, etc.) for our impact review. We also offer that use of an electric pump would eliminate such air emissions.

* Noise – For the project PS-1 pump, we note (pg. 6-5) that the pump station (housing) was offered as noise shielding. We agree that housing would provide some shielding. Source reductions with the pump itself (type, quality, etc.) would also reduce noise levels. As indicated above for air emissions, we also offer that noise emissions would essentially be eliminated if an electric pump was used instead of the proposed diesel pump. In addition to the pump, all other construction equipment (bulldozers, etc.) should be tuned to manufacturer's specifications as well as being equipped with appropriate mufflers and engine housings to minimize noise. It is clear, however, that such noise abatement is more important if residents and other sensitive receptors are located nearby and are affected by the project. In any case, however, project workers could be affected.

From a NEPA disclosure standpoint, the FEIS should document construction noise data available from the literature for typical construction equipment such as would be used for the reservoir project (e.g., dBA noise levels at 50 ft). Disclosure of the estimated construction time is also suggested in order to help determine the magnitude of the noise (and air) impact.

* *Environmental Justice (EJ)* – Page 6-43 states that "[i]n public outreach efforts to date, only one potential environmental justice issue has been identified: the loss of jobs for low income and minority workers as a result of acquiring agricultural land for the construction of the reservoir." To help offset this, we are pleased to note (pg. 6-44) that "...the SFWMD is conducting training programs to allow local individuals to acquire the skills needed to construct the reservoir." We assume that the locally affected people (particularly minorities and low-income populations) will not only benefit from the training but that at least some will be candidates for actual employment. In addition to this proposed offset, we recommend that the COE also provide people affected by the project continued project updates and coordination with their community leaders.

For better NEPA documentation for EJ, the FEIS should provide U.S. Census 2000 data (e.g., one or more block groups) for the project area to specifically account for any minority concentrations ("pockets"). For perspective, this project block group data should also be compared to adjacent block groups, the project county (Hendry) and the project state (Florida) to further determine any minority concentrations near the project. Overall, the number of minority and low-income residents affected by the project (through relocation or other impacts), their demographics and any potential disproportionate effects should be reasonably documented. The FEIS should address this further.